L 04509-67 EWT(m)/EWF(1) IJP(c)

ACC NR: AP6035631 SOURCE CODE: UR/0089/66/020/005/0392/0396

8
B

AUTHOR: Lebedev, V. N.; Zel'chinskiy, M.; Salatskaya

ORG: none

TITLE: Experimental determination of radiation quality factors in the vicinity of high-energy accelerators 19

SOURCE: Atomnaya energiya, v. 20, no. 5, 1966, 392-396

TOPIC TAGS: high energy accelerator, synchrocyclotron

ABSTRACT: The results of some measurements of the effective quality factors for pulsed molticomponent radiation in the vicinity of a 10-Bev synchrophasotron are presented. The quality factors obtained by a recombination method varied from 3 to 11. These values are compared with values from other high-energy accelerators. Some data on values measured during experiments with a 680-Mev synchrocyclotron are also given. Orig. art. has: 1 figure and 2 tables. [NA]

SUB CODE: 20 / SUBM DATE: 21 Oct 65 / ORIG REF: 011 / OTH REF: 014

UDC: 577.391

Card 1/1 mjs 0922 0033

ACC NR: AP6024360 SOURCE CODE: UR/0280/66/000/002/0032/0038

AUTHOR: Lebedev, V. N. (Moscow)

ORG: none

TITLE: On equivalence of concave-convex antagonistic games to problems of mathematical programming

SOURCE: AN SSSR. Izvestiya. Tekhnicheskaya kibernetika, no. 2, 1966, 32-38

TOPIC TAGS: game theory, programming, minimization, mathematic analysis

ABSTRACT: An antagonistic game with a concave-convex payoff function and convex strategy sets is considered. It is shown that two convex programming problems which are dual with respect to one another, are equivalent to such a game and form a dual pair. One of these problems is equivalent to the maximin problem, and the other, to the minimax problem. Thus, when the payoff function f (X, Y) is rigorously convex with respect to Y for any $X \subset G$, the maximin problem reduces to the equivalent convex programming problem of the maximization of

$$\boxed{\begin{aligned}\Phi_1(Y, \lambda_1, \theta) = f[X, \varphi^{-1}(X, \lambda, \theta)] - \lambda' h[\varphi^{-1}(X, \lambda, \theta)] - \\ - \theta' \varphi^{-1}(X, \lambda, \theta)\end{aligned}} \qquad (1)$$

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ACC NR: AP6024360

and f (X, Y) is rigorously concave with respect to X for any Y ⊂ H, the minimax problem reduces to the equivalent convex programming problem of minimizing the convex function

$$\boxed{\Phi_1(Y, v, u) = f[\psi^{-1}(Y, v, u), Y] + v' g[\psi^{-1}(Y, v, u)] + u'\psi^{-1}(Y, v, u)} \qquad (2)$$

This also implies that, for these problems, the existence of the maximin guarantees the existence of the minimax, and vice versa. Orig. art. has: 65 formulas.

SUB CODE: 12, [illegible], 09/ SUBM DATE: 10Jul65/ OTH REF: 004

Card 2/2

LEBEDEV, V.N.

LEBEDEV, V.N.-- "Methods of Calculation of Transition Processes of a Hydraulic Generator in Cases of Load Decreases." Cand Tech Sci, Moscow Order of Lenin Power Engineering Inst imeni V.M. Molotov, 5 Feb 54, (Vechernyaya Moskva 25 Jan 54)

SO: Sum 168, 22 July 1954

LEBEDEV, V.N., dotsent; NETUSHIL, A.V., doktor tekhnicheskikh nauk.

On a textbook of theoretical electrical engineering for schools of higher learning. Elektrichestvo no.4:71-72 Ap '54. (MLRA 7:5)

1. Dnepropetrovskiy institut inzhenerov zheleznodorozhnogo transporta im. Kaganovicha (for Lebedev). 2. Moskovskiy energeticheskiy institut im. Molotova (for Netushil). (Electric engineering)

V N LEBEDEV, N V CHVANKINA, and V YU DZHURUK

"Development of a Procedure for Evaluating the Pulse Properties of Promising Receiver-Amplifier Tubes; Investigation of these Properties and Production of Scientifically Based Norms for Inclusion into Technical Specifications and Handbooks" from Annotations of Works Completed in 1955 at the State Union Sci. Res. Inst; Min. of Radio Engineering Ind.

So: B-3,080,964

LEBEDEV, V.N.

Method of determining "ground" on d.c. connectors on 220/440 v without switching out consumers. Energetik 5 no.6:24 Je '57. (MIRA 10:7)

(Electric power distribution)

LEBEDEV, V.N.

Integration methods for equations of transient processes in electric systems. Nauch.dokl.vys.shkoly; energ. no.2:21-26 '59. (MIRA 13:1)

1. Dnepropetrovskiy institut inzhenerov zheleznodorozhnogo transporta.
(Integrals, Generalized) (Transinets (Electricity))

LEBEDEV, V.N.

Further improvement in the training of specialists in the field of communications. Vest. sviazi 19 no.7:15-17 Jl '59.
(MIRA 13:8)

1. Zamestitel' ministra svyazi SSSR.
(Telecommunication--Employees)

LEBEDEV, V.N.

Improve the apparatus for controlling communications organs. Vest. sviazi 20 no.5:18 My '60. (MIRA 13:12)

1. Zamestitel' ministra svyazi SSSR.
(Telecommunication)

LEBEDEV, V.N.

Raise the level of work with communication workers. Vest. sviazi 20 no.7:15-17 Jl '60. (MIRA 13:11)

1. Zamestitel' ministra svyazi SSSR.
(Telecommunication--Employees)

LEBEDEV, V.N.

A grounded protection system in a four-wire 380 volt power distribution network. Energetik 10 no.6:28 Je '62. (MIRA 16:3)
(Electric power distribution)

LEBEDEV, V.N.

Overcurrent d.c. relay protection system. Prom. energ. 18 no.12:16 D '63. (MIRA 17:1)

LEBEDEV, V.N.

Widening the use of the paired light pulse method in studying the time-dependent characteristics of photomultipliers. Prib. i tekh. eksp. 9 no.2 133-135 Mr-Ap'64. (MIRA 17:5)

LEBEDEV, V.N.

Let's develop the movement for communist labor in telecommunication departments and enterprises. Vest. sviazi 24 no.3:29-30 Mr '64. (MIRA 17:4)

1. Zamestitel' ministra svyazi SSSR.

LEBEDEV, V.N.

Training periods and improved use of young specialists. Vest. sviazi 24 no.10:31 O '64. (MIRA 17:12)

1. Zamestitel' ministra svyazi SSSR.

LEBEDEV, V.N.

New developments in the training of communication engineers. Vest. sviazi 25 no.1:20 Je '65. (MIRA 18:4)

1. Zamestitel' ministra svyazi SSSR.

LEBEDEV, V.N.

Observe strictly the labor legislation in telecommunication enterprises.
Vest. sviazi 25 no.9:14-16 S '65. (MIRA 18:9)

1. Zamestitel' ministra svyazi SSSR.

LEBEDEV, V.N.

Recovery in anthrax lesions of the intestine. Sov. med. 25 no.7:134-138 Jl '61. (MIRA 15:1)

1. Iz otdela osobo opasnykh infektsiy (zav. V.N.Lebedev) Lipetskoy oblastnoy sanitarno-epidemiologicheskoy stantsii.
(ANTHRAX) (INTESTINES—DISEASES)

LEBEDEV, V.N.

Some manifestations of the side effects of pyrazolidine in the treatment of rheumatoid arthritis. Preliminary report. Klin. med. no.1:112-114 '62. (MIRA 15:1)

1. Iz Sochinskogo nauchno-issledovatel'skogo instituta kurortologii (dir. - zasluzhennyy deyatel' nauki prof. M.M. Shikhov).
(ARTHRITIS, RHEUMATOID) (PYRAZOLIDINE)

PUSHKIN, V.Z.; LEBEDEV, V.N. (Petrozavodsk)

Isolation of 17-ketosteroids from the daily urine in chronic tonsillitis. Vest.otorin. no.5:27-30 '62. (MIRA 15:9)
(STEROIDS) (TONSILS--DISEASES)
(URINE--ANALYSIS AND PATHOLOGY)

LEBEDEV, V.N.

Case of hypoplastic hematopoiesis following pyrazolidine therapy. Probl.gemat.i perel.krovi no.9:54-55 '62. (MIRA 15:12)

1. Iz TSentral'noy sochinskoy polikliniki (glavnyy vrach Ya.I. Gokhgelerint).
(PYRAZOLIDINE) (ANEMIA)

LEBEDEV, V.N.

Organization of dispensary observation for children with blood diseases. Vop.okh.mat.i det. 7 no.9:75-76 S '62. (MIRA 15:12)

1. Iz Sochinskogo mezhrayonnogo gematologicheskogo kabineta (zav. V.N.Lebedev).
(BLOOD--DISEASES) (CHILDREN--MEDICAL EXAMINATIONS)

LEBEDEV. V.N. (Sochi)

Interdistrict hematological center in Sochi. Probl. gemat. i perel. krovi no.12:55-56'62. (MIRA16:8)

(SOCHI--HEMATOLOGY)

PUSHKIN, V.Z.; LEBEDEV, V.N.; MOS'PANOV, L.S. (Petrozavodsk)

Interrelations between chronic tonsillitis and rheumatic fever (content of sialic acid in the blood serum of patients suffering from chronic tonsillitis and rheumatic fever). Vop.revm. 3 no.1:85-88 Ja-Mr '63. (MIRA 16:4)
(SIALIC ACIDS) (TONSILS—DISEASES) (RHEUMATIC FEVER)

LEBEDEV, V.N.

Diffuse myelomatosis. Vrach. delo no.12:115 D '63.
(MIRA 17:2)

1. Sochinskaya gorodskaya bol'nitsa No.2 i mezhrayonnyy gematologicheskiy kabinet.

LEBEDEV, V.P.

Rotating production lines for the manufacture of box containers.
Der.prom. 11 no.2:12-13 F '62. (MIRA 15:1)

1. Kavkazskiy filial TSentral'nogo nauchno-issledovatel'skogo instituta mekhaniki i energetiki.
(Assembly-line methods) (Boxes)

DZHAKUBOV, N.Kh.; LEBEDEV, V.P.

Increasing the operating capacity of circular saws. Der.prom. 11 no.3:22-23 Mr '62. (MIRA 15:2)

1. Kavkazskiy filial TSentral'nogo nauchno-issledovatel'skogo instituta mekhanizatsii i energetiki lesnoy promyshlennosti.

(Circular saws)

ABRIKOSOV, S.V.; ALEKSEYEV, A.P.; ZOTOV, N.M.; KUDRYASHOV, G.F.; LAPOV, N.I.; LEBEDEV, V.P., inzh.; CHEKMENEV, Ye.Ye.; MEYEROVICH, Ye.A., inzh., retsenzent; RYBAKOVA, V.I., inzh., red.izd-va; SOKOLOVA, T.F., tekhn.red.

[Gasoline-electric and diesel-electric power units with a capacity from 0.5 to 400 kilowatts; reference book] Benzoelektricheskie i dizel'elektricheskie agregaty moshchnost'iu ot 0,5 do 400 kvt; spravochnik. Pod red. V.P.Lebedeva. Moskva, Gos.nauchno-tekhn. izd-vo mashinostroit.lit-ry, 1960. 543 p. (MIRA 14:1)

(Electric power stations)

LEBEDEV,V.P., inzhener; CHEKMENEV,Ye.Ye., inzhener

New gasoline engines of the UD series. Sel'khozmashina no.8:24-25 Ag'55. (MLRA 8:11)

(Gas and oil engines)

LEBEDEV, V.P., inzh.

Openwork. Energ.stroi. no.5:88-98 '58. (MIRA 12:5)

1. Zamestitel' glavnogo inzhenera Upravleniya promyshlennykh predpriyatiy. (Volga Hydroelectric Power Station--Building materials)

LEBEDEV V.P.

AUTHOR: Lebedev, V.P. 113-58-3-2/16

TITLE: Determination of the Clearance in Bearings of the Crankshaft by Means of Radioactive Isotopes (Opredeleniye zazora v podshipnikakh kolenchatogo vala s pomoshch'yu radioaktivnykh izotopov)

PERIODICAL: Avtomobil'naya Promyshlennost', 1958, Nr 3, pp 5-8 (USSR)

ABSTRACT: The maximum admissible clearance in the bearings of the crankshaft of the engine ZIL-120 is 0.10 - 0.12 mm. Experiments were made to determine the dependence of the wear on the value of the clearance in the bearing. In these experiments, radioactive isotopes with -radiation were used. The surface of the parts under investigation is treated with radioactive isotopes and their content in lub oils is then measured by the Geiger-Mueller counter. In the case of the crankshaft, radioactive zinc Zn^{65} is inserted in the metal. These insertions are called "witnesses" (svidetel'). All witnesses of a single crankshaft journal have an activity of 23-25 mCurie. Figure 1 shows the arrangement of the witnesses on the crankshaft. The test stand for measuring the wear in the crankshaft bearings is shown in Figure 2. It was demonstrated that the life of the bearings may be pro-

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113-58-3-2/16

Determination of the Clearance in Bearings of the Crankshaft by Means of Radioactive Isotopes

longed by increasing the clearance to 0.20 - 0.22 mm. Clearances of 0.25 - 0.30 mm cause shrinking of the babbitt metal and the formation of an antifriction layer at its sides, especially at high revolution rates. Investigation of wear by means of radioactive isotopes is very useful for determining the working conditions of various details.
There are 8 figures, 1 table, and 4 Soviet references.

AVAILABLE: Library of Congress

Card 2/2 1. Isotopes(Radioactive)-Applications 2. Bearings-Test Results

ALEKSEYEV, G.P.; ANDON'YEV, V.S.; ARNGOL'D, A.V.; BASKIN, S.M.; BASHMAKOV, N.A.; BEREZIN, V.D.; BERMAN, V.A.; BIYANOV, T.F.; GORBACHEV, V.N.; GRECHKO, I.A.; GRINBUKH, G.S.; GROMOV, M.F.; GUSEV, A.I.; DEMENT'YEV, N.S.; DMITRIYEV, V.P.; DUL'KIN, V.Ya.; ZVANSKIY, M.I.; ZENKEVICH, D.K.; IVANOV, B.V.; INYAKIN, A.Ya.; ISAYENKO, P.I.; KIPRIYANOV, I.A.; KITASHOV, I.S.; KOZHEVNIKOV, N.N.; KORMYAGIN, B.V.; KROKHIN, S.A.; KUDOYAROV, L.I.; KUDRYAVTSEV, G.N.; LARIN, S.G.; LEBEDEV , V.P.; LEVCHENKOV, P.N.; LEMZIKOV, A.K.; LIPGART, B.K.; LOPAREV, A.T.; MALYGIN, G.F.; MILOVIDOVA, S.A.; MIRONOV, P.I.; MIKHAYLOV, B.V., kand. tekhn. nauk; MUSTAFIN, Kh.Sh., kand. tekhn. nauk; NAZIMOV, A.D.; NEFEDOV, D.Ye.; NIKIFOROV, I.V.; NIKULIN, I.A.; OKOROCHKOV, V.P.; PAVLENKO, I.M.; PODROBINNIK, G.M.; POLYAKOV, G.Ya.; PUTILIN, V.S.; RUDNIK, A.G.; RUMYANTSEV, Yu.S.; SAZONOV, N.N.; SAZONOV, N.F.; SAULIDI, I.P.; SDOBNIKOV, D.V.; SEMENOV, N.A.; SKRIPCHINSKIY, I.I.; SOKOLOV, N.F.; STEPANOV, P.P.; TARAKANOV, V.S.; TREGUBOV, A.I.; TRIGER, N.L.; TROITSKIY, A.D.; FOKIN, F.F.; TSAREV, B.F.; TSETSULIN, N.A.; CHUBOV, V.Ye., kand. tekhn. nauk; ENGEL', F.F.; YUROVSKIY, Ya.G.; YAKUBOVSKIY, B.Ya., prof.; YASTREBOV, M.P.; KAMZIN, I.V., prof., glav. red.; MALYSHEV, N.A., zam. glav. red.; MEL'NIKOV, A.M., zam. glav. red.; RAZIN, N.V., zam. glav. red. i red. toma; VARPAKHOVICH, A.F., red.; PETROV, G.D., red.; SARKISOV, M.A., prof., red.; SARUKHANOV, G.L., red.; SEVAST'YANOV, V.I., red.; SMIRNOV, K.I., red.; GOTMAN, T.P., red.; BUL'DYAYEV, N.A., tekhn. red.

(Continued on next card)

ALEKSEYEV, G.P.---(continued). Card 2.

[Volga Hydroelectric Power Station; a technical report on the design and construction of the Volga Hydroelectric Power Station (Lenin), 1950-1958] Volzhskaia gidroelektrostantsiia; tekhnicheskii otchet o proektirovanii i stroitel'stve Volzhskoi GES imeni V.I.Lenina, 1950-1958 gg. V dvukh tomakh. Moskva, Gosenergoizdat. Vol.2.[Organization and execution of constrution and assembly work] Organizatsiia i proizvodstvo stroitel'no-montazhnykh rabot. Red. toma: N.V.Razin, A.V.Arngol'd, N.L. Triger. 1962. 591 p. (MIRA 16:2)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Razin).
(Volga Hydroelectric Power Station (Lenin)--Design and construction)

ACCESSION NR: AP3001581 S/0191/63/000/006/0032/0037

AUTHOR: Lebedev, V. P.; Shtarkman, L. B.; Arzhakov, S. A.

TITLE: Some mechanical problems in the packing of powder polymers

SOURCE: Plasticheskiye massy, no. 6, 1963, 32-37

TOPIC TAGS: packing problems of powder polymers, porosity-pressure dependence, porosity-temperature dependence

ABSTRACT: The distribution of pressure during the compression of a number of powder polymers in the pressure interval from 0 to 5000 kg cm/square cm at room temperature has been investigated. It has been proven that the pressure during the compression of samples of powder polymers such as polyvinylchloride, polymethylmetacrylate, polyisobutyl and polyisoamylmetacrylate, is distributed according to the exponential law. It was shown that the relationship between the applied pressure and the pressure transmitted through the sample polymer is related to the properties of the compressed powder through a coefficient of particle friction on the walls of the press and through the applied weight and the angle of natural deflection. The porosity dependence of the polymers on the applied pressure in the intervals between 0 to 5000 kg cm/square cm was also studied. It was established that the pressure required for the attainment of density equal to the density of

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ACCESSION NR: AP3001581

the particles of powder material is characteristic for each individual polymer and does not depend on the shape, size or quantity of powder if the temperature is constant. With the increase of temperature, the magnitude of the characteristic pressure decreases. Comparison of this dependence with the lower pressure limit necessary to obtain transparent samples from polymethylmetacrylate powder has proven the point of view that the presence of these limits is stipulated by the narrowing of the particles during the compression of powder to the full limit of compression of the free volume between them. The uselessness of the existing experimental formula used previously in the description of the porosity dependence on the pressure has been indicated. A new empirical formula which satisfactorily corresponds with the experimental data has been proposed. Orig. art. has: 4 tables, 6 figures.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 01Jul63	ENCL: 00
SUB CODE: 00	NO REF SOV: 008	OTHER: 002

Card 2/2

LERNER, B.M.; LEBEDEV, V.P.

Electrical network of a three-shaft D-series diesel train. Elek. i tepl. tiaga 7 no.6:21-27 Je '63. (MIRA 16:9)

1. Glavnyy inzh. depo Vil'nyus (for Lerner). 2. Zamestitel' nachal'nika depo Vil'nyus po remontu (for Lebedev).
(Diesel locomotives)

LEBEDEV, V.P.; SHTARKMAN, L.B.; ARZHAKOV, S.A.

Problems in the mechanics of packing of powdered polymers. Plast. massy no.6:32-37 '63. (MIRA 16:10)

LEBEDEV, V.P., inzh.

Obtaining keramzit sand by crushing gravel in S-599 and S-379 crushers. Stroi. mat. 9 no.7:8 Jl '63. (MIRA 16:11)

GERASIMOV, Yakov Ivanovich, prof.; DREVING, Vladimir Petrovich;
YEREMIN, Yevgeniy Nikolayevich; KISELEV, Andrey
Vladimirovich; LEBEDEV, Vladimir Petrovich; PANCHENKOV,
Georgiy Mitrofanovich; SHLYGIN, Aleksandr Ivanovich;
NIKOL'SKIY, B.P., prof., retsenzent; SHUSHUNOV, V.A., prof.,
retsenzent; LUR'YE, G.Ye., red.; SHPAK, Ye.G., tekhn. red.

[Course in physical chemistry] Kurs fizicheskoi khimii. [By]
IA.I.Gerasimov i dr. Moskva, Goskhimizdat, 1963. Vol.1. 624 p.
(MIRA 17:1)

1. Chlen-korrespondent AN SSSR (for Gerasimov, Nikol'skiy).
2. Kafedra phizicheskoy khimii Leningradskogo gosudarstvennogo
universiteta (for Nikol'skiy, Shushunov).

VOLKOV, V.T.; DUDKO, A.A.; LEBEDEV, V.P.; LIPGART, B.K.; MIKHAYLOV, B.V., kand.tekhn.nauk; MIKHAYLOV, V.A., kand.tekhn.nauk; REKUNOV, V.F.; SAVEL'YEV, N.P.; SOROKIN, V.V.; KHARIN, A.I. kand.tekhn.nauk; Prinimali uchastiye: IVANOV, N.A., kand.tekhn.nauk; INOKOVA, O.L.; GOMOZOVA, N.A., red.; NAUMOVA, G.D., tekhn.red.

[Mechanization and automation in the rock products industry] Mekhanizatsiia i avtomatizatsiia v promyshlennosti nerudnykh stroitel'nykh materialov. [By] V.T.Volkov i dr. Moskva, Gosstroiizdat, 1963. 353 p. (MIRA 17:3)

LERNER, Boris Markovich; LEBEDEV, Viktor Pavlovich; PALKIN,
Aleksandr Prokof'yevich; SAZONOV, A.G., red.

[Diesel D trains; working principles, operation, maintenance and repair] Dizel'nye poezda D; ustroistvo, ekspluatatsiia i remont. Moskva, Transport, 1965. 346 p. (MIRA 18:2)

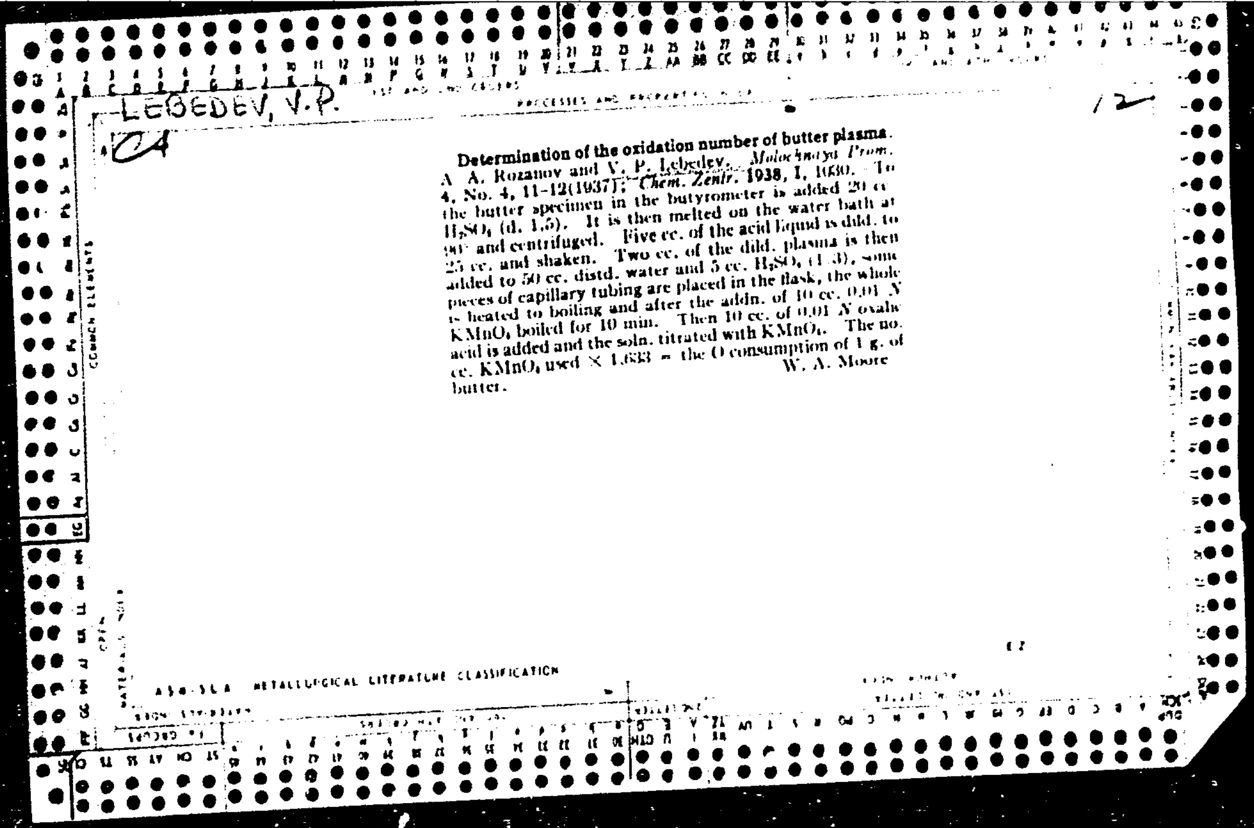
LEBEDEV, V.P.

Co/

07

Analysis of vegetable oils by the Kaufmann thiocyanate method R. I. Ivanov, V. P. Lebedev and P. P. Kel'tsev. *Schriften zentral. Forschungsinst. Lebensmittelchem.* (U. S. S. R.) 4, 185-91(1935). The Kaufmann thiocyanate method gave concordant results when applied to linseed, hemp-seed, pumpkin-seed, clary-seed, sunflower-seed, poppy-seed, Swiss pine-nut, Moldavian balm-seed, tanner's sumac-seed and lallemantia oils. Numerical results are tabulated. The method is sufficiently accurate even when there is a high degree of unsatn. J. F. S.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



LEBEDEV, V.P.

C4

12

PROCESSES AND PROPERTIES INDEX

Determination of the oxidation number of butter plasma.
A. A. Rozanov and V. P. Lebedev. *Molochnaya Prom.* 4, No. 4, 11-12(1937); *Chem. Zentr.* 1938, I, 1630. To
the butter specimen in the butyrometer is added 20 cc.
H_2SO_4 (d. 1.5). It is then melted on the water bath at
90° and centrifuged. Five cc. of the acid liquid is dild. to
25 cc. and shaken. Two cc. of the dild. plasma is then
added to 50 cc. distd. water and 5 cc. H_2SO_4 (1:3), some
pieces of capillary tubing are placed in the flask, the whole
is heated to boiling and after the addn. of 10 cc. 0.01 N
$KMnO_4$ boiled for 10 min. Then 10 cc. of 0.01 N oxalic
acid is added and the soln. titrated with $KMnO_4$. The no.
cc. $KMnO_4$ used × 1.683 = the O consumption of 1 g. of
butter. W. A. Moore

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

2

V. P. LEBEDE

Structure of disperse supports (of catalysts) from the viewpoint of the theory of active ensembles. [illegible] and V. P. Lebedev (Univ., Moscow). *Zhur. Fiz. Khim.* 23, 1183-94(1949); cf. C.A. 42, 5310c; 43, 6892b.—The "migration area" Δ of a catalyst support is identified with that fraction of the area of a face of a microcrystal which is not in contact with another crystal, i.e., is available for adsorption. If *l* is the edge of the microcrystal (supposed to be a cube), S the available surface of 1 g. [illegible] of the support [illegible] which is unavailable is ε [illegible] the fraction of surface which is unavailable. When calcd. from literature data, *l* is 20 to 80 A. and ε is 0.17 to 0.80 for MgO, SiO_2, 7 samples of active C and 2 samples of Al_2O_3. If S_i is the available surface of 1 cc. of support, for all these samples S_i = [illegible] sq. m./cc. The energy *F* of formation of disperse support is connected with ε by the equation $F = -RT \ln[(1 - \epsilon)/\epsilon]$; *F* is −1000 to +800 cal. for the supports studied. J. J. Bikerman

C.A.

Synthesis and decomposition of ammonia in electrical discharges. I. Sensitized decomposition of ammonia in a glowing discharge. V. P. Lebedev, Yu. V. Filippov, and N. I. Kobozev (Lomonosov State Univ., Moscow). *Zhur. Fiz. Khim.* **24**, 845-52(1950). The decompn. of NH in a glowing discharge in the presence of Hg and Na vapor was studied in connection with the theory of "energetic catalysis." Hg has a pos. and Na a neg. catalytic effect. The sensitizing effect of Hg was similar to that found in the photochem. decompn. of NH. P. W. H.

CA

Synthesis and decomposition of ammonia in electrical discharges. II. Sensitized synthesis of ammonia in a glow discharge. Yu. V. Filippov, V. P. Lebedev, V. V. Zalaman, and N. I. Kobozev (Lomonosov State Univ., Moscow). *Zhur. Fiz. Khim.* 24, 1009-15(1950); cf. *C.A.* 45, 433*e*.—The synthesis of NH_3 in the presence of vapors of Hg, Zn, and Cd in a glow discharge was studied. The effect of Hg was pos., while Zn and Cd gave neg. effects. An empirical equation was derived from the data, defining the intensity of the effect of the additive. An explanation of the observed phenomena was offered on the basis of the energies of the reacting mol. and radicals. A mechanism, occurring by means of excited N and at. H, was proposed for the electrosynthesis of NH_3.

Paul W. Howerton

YEVSEYEV, A.M. and LEBEDEV, V.P. Sr/Sci. Colleague

"Concerning the theory of Association in Polar Liquids" a paper given at the All-University Scientific Conference "Lomonosov Lectures", Vest. Mosk. Un., No. 8, 1953

Translation U-7895, 1 Mar '56

Lebedev, V. P.

USSR

Association of polar molecules in solutions. A. M. Evseev and V. P. Lebedev (M. V. Lomonosov State Univ., Moscow). *Zhur. Fiz. Khim.* 27, 1068-78(1953); cf. Panchenkov *Theory of the Viscosity of Liquids*, 1947, 158 pp. (*C.A.* 41, 7228*d*).—No specific model can be used in calcn. of the degree of assocn. of polar mols. in soln. by means of the equation $\eta = (P_\infty - P)/(P_\infty - R)$, where η is the ratio of the no. of solute mols. in the assocd. state to the total no. of solute mols., P_∞ and P are the effective molar polarization at infinite diln. and the actual concn., resp., and R is the molar refraction; the resulting value of η is only the min. no. of assocd. mols. The molar orientation polarization $P_{or.}$ can be calcd. for the electrostatic case by means of the equation $P_{or.} = P_{or.\infty}e^{-\beta\gamma}$, where $P_{or.\infty}$ is the $P_{or.}$ at infinite diln., β is $1.5(P_{or.\infty})d/M$, and γ, d, and M are the mole fraction, d., and mol. wt. of the solute, resp. This equation is valid at temps. as low as −50°. The mol. interaction const. is also expressed as $2\pi N\mu^2 d/3kTM$, where N, μ, k, and T are Avogadro's no., dipole moment, Boltzmann's const., and abs. temp., resp. J. W. Loweberg, Jr.

USSR/Chemistry - Catalysis

Card 1/1 : Pub. 147 - 19/27

Authors : Lopatkin, A. A.; Shekhobalova, V. I.; and Lebedev, V. P.

Title : Catalytic activity of Pt adsorption catalysts during H_2O_2 decomposition

Periodical : Zhur. fiz. khim. 28/12, 2222-2231, Dec 1954

Abstract : Investigation was conducted to determine the catalytic activity of adsorbed Pt catalysts over silica gel during the decomposition of H_2O_2 at charging degrees ranging from 0.0013 to 0.033. It was revealed that the reaction of peroxide decomposition follows two phases. It was found that an increase in the permissible surface of the carrier leads to an approximately proportional increase of the catalytic activity. The complex extreme relation between the catalytic activity of a Pt catalyst and the degree of charging was established. Eight USSR references (1939-1952). Tables; graphs; drawing.

Institution : The M. V. Lomonosov State University, Moscow

Submitted : May 18, 1954

LEBEDEV, V.P.

A history of the work on the theory of homogeneous catalysis for the department of physical chemistry of Moscow State University. V. P. Lebedev. [illegible]

[illegible]

[illegible]

[illegible]

Chem

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Lebedev, V. P.

History of the work on gaseous [illegible]

[illegible]

LEBEDEV, V.P.

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The relation of the catalytic activity of platinum to the roasting temperature. A. A. [illegible], Zh. V. Strel'nikova, and V. P. Lebedev. Vestnik Moskov. Univ. 11, Ser. Mat., ~~Mekh., Astron.,~~ [illegible] Khim. No. 1 [illegible] Preliminary results are given of the study of the [illegible] tion and deactivation of Pt catal [illegible] sorption catalysts. The [illegible] control process. The roasting temp. [illegible] The curve for activity [illegible] 180, 220, and 250°. From 250 to [illegible] a steady decline in the activity. At [illegible] slight max [illegible] with the [illegible] increases it continues to decrease [illegible]

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LEBEDEV, V. P.

USSR/ Chemistry - Physical chemistry

Card 1/2 Pub. 147 - 24/35

Authors : Strel'nikova, Zh. V.; Lopatkin, A. A.; and Lebedev, V. P.

Title : Thermal activation and deactivation on Pt-black during hydrogen peroxide decomposition

Periodical : Zhur. fiz. khim., 30/1, 196-201, Jan 1956

Abstract : Experiments were made to determine the effect of calcination temperature ranging from 100 to 700° C. on the catalytic activity of platinum black during the decomposition of hydrogen peroxide. Hydrogen peroxide decomposition was used in the role of a control process for the purpose of determining the activity of the Pt-black. An extreme dependence upon the activity maxima was observed at temperatures of 160, 220, 250 and 500°C. The cause

Institution : Moscow State University im. M. V. Lomonosov

Submitted : July 7, 1955

Card 2/2 Pub. 147 - 24/35

Periodical : Zhur. fiz. khim. 30/1, 196-201, Jan 1956

Abstract : for the crop in activity at a temperature range of from 250 to 500° C are analyzed. Origination of active centers followed an increase in temperature; these active centers disappear upon reaching a new critical temperature at which the intensity of the active phase increases again. Fourteen references: 9 USSR, 1 USA, 3 Germ., and 1 Eng. (1890-1955). Table; graphs.

LEBEDEV, V. P.

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The thermal activation and deactivation of platinum adsorption catalysts in the decomposition of hydrogen peroxide. Zh. V. Strel'nikova, A. A. Lopatkin, and V. P. Lebedev (M. V. Lomonosov State Univ., Moscow). [illegible]

[illegible] degrees [illegible] previously [illegible] the Pt SiO₂ catalysts [illegible] on the Pt centers [illegible] effects [illegible] more pronounced as [illegible] increases. The characteristic activity max. tend to shift towards higher temps. with more dil. catalysts. The high thermal activation in the very dil. [illegible] compared with extinction of [illegible] M. M. [illegible]

LOPATKIN, A.A.; STREL'NIKOVA, Zh.V.; OSIPOVA, N.S.; LEBEDEV, V.P.

Effect of the preliminary roasting on thermal activation and desactivation of platinum catalysts. Vest. Mosk. un. Ser. mat., mekh., astron., fiz. khim., 12 no.5:215-219 '57. (MIRA 11:9)

1. Kafedra fizicheskoy khimii Moskovskogo gosudarstvennogo universiteta.
(Platinum) (Catalysts)

LEBEDEV, V.P

6

Magnetochemistry of active centers. IV. The relation of the magnetic susceptibility of adsorption platinum catalysts on the roasting temperature. A. A. Lopatkin, Zh. V. Strel'nikova, and V. P. Lebedev (M. V. Lomonosov State Univ., Moscow). Zhur. Fiz. Khim. 31, 105-9(1957); cf. C.A. 50, 10500b, 13581c; 5, 10280f.—The magnetic susceptibility, χ, was detd. for Pt-on-SiO_2 catalysts (degree of filling of the surface, α = 0.054, 0.0178, and 0.035) as a function of the preliminary heat-treatment. For α = 0.0178 and α = 0.035 the χ vs. T curves are completely identical. A comparison of data on catalytic activity (based on H_2O_2 decompn.) and magnetic properties showed that for the catalyst with α = 0.004, an increase in activity is accompanied by an increase in the paramagnetism. For the 2 remaining catalysts this is true only below T = 550°.

J. Rovtar Leach

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LEBEDEV, V. P.

[illegible]

[illegible] 31 [illegible] 50.

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13581c. — Two equil. ranges were observed during the sintering of Pt black on SiO_2 gel at 200°. The activity isotherm had several max. and min. differing considerably from the initial; at 350° and 400° the activity dropped sharply (apparently in a 1st-order kinetic reaction) and then remained const. at const. temps. When the catalysts were formed by adsorption of Pt on SiO_2 gel, only a nonstationary type of isotherm was observed on calcination of up to 12 hrs., and the initial activity remained const. at low catalyst filling (0.001), which was independent of the time of heating. The carrier prevented a thermal deactivation of the catalyst, and at longer heating the activity of adsorption catalysts became equal to the initial activity after the rise and fall at the beginning of the thermal treatment.

W. M. Sternberg

LEBEDEV, V.P

76-11-25/35

AUTHORS: Kobozev, N.I., Lebedev, V.P., Strakhov, B.V., Zykova, G.I.

TITLE: The Physical Chemistry of Concentrated Ozone (Fiziko-khimiya kontsentrirovannogo ozona) III. The Explosive Oxidation of Nitrogen in Mixtures Containing Concentrated Ozone (III. Vzryvnoye okisleniye azota v smesyakh s kontsentrirovannym ozonom)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 11, pp. 2547-2550 (USSR)

ABSTRACT: An oxidation of nitrogen under explosion in mixtures with concentrated ozone within the pressure range of from 25 to 100 mm torr was carried out. It is shown that within this range a linear increase of the nitrogen oxide leakage was observed in the case of increased pressure. The nitrogen oxide leakage curves in dependence on the composition of the initial mixture pass through a maximum at about 75% O_3. In the case of the here employed composition and the highest experimental pressure exercise (150 mm) the nitrogen oxide leakage amounted to about 2%. Comparatively small additions of oxygen considerably reduce this leakage. There are 4 figures and 3 Slavic references.

Card 1/2

The Physical Chemistry of Concentrated Ozone. III. The Explosive Oxidation of Nitrogen in Mixtures Containing Concentrated Ozone 76-11-25/35

ASSOCIATION: Moscow State University imeni M.V.Lomonosov (Moskovskiy gosudarstvennyy universitet im. M.V.Lomonosova)

SUBMITTED: September 18, 1956

AVAILABLE: Library of Congress

Card 2/2

LEBEDEV, Vladimir P. (Moscow)

"Die Theorie der Aktiven Atomgruppierungen von N. I. Kobosev."
Chemische Technik, May 1958.

LEBEDEV, V. P., KOBOSEV, Nikolay I., and SHEKOBALOVA, Valentina I.

"Anwendung verdunnter Adsorptionskatalysatoren in der Chemischen Industrie." Chemische Technik, May 1958.

5(4) SOV/156-59-2-10/48

AUTHORS: Lebedev, V. P., Strel'nikova, Zh. V.

TITLE: The Self-poisoning of Platinum Adsorption Catalysts (Avtootravleniye adsorbtsionnykh platinovykh katalizatorov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Khimiya i khimicheskaya tekhnologiya, 1959, Nr 2, pp 260-263 (USSR)

ABSTRACT: The authors explain self-poisoning as a catalytic process in which a reaction product blocks and inactivates an active center of the catalyst with a certain probability. The probability of poisoning is characteristic of the process concerned. Self-poisoning distinguishes itself from the similar phenomenon of the adsorption inhibition by the irreversibility of blocking. As an example the hydrogenation of benzalaniline in solution of absolute alcohol is investigated on platinum applied to silicagel. In this case the blocking was proved on the basis of an analysis of the charge curves by Sokol'skiy who carried out the experiments. The equation for the reaction is written down in the following way:

$\frac{1}{[H_2]} = \frac{1}{k[H_2]_0^2} \cdot \frac{1}{t} + \frac{1}{[H_2]_0}$, where $[H_2]_0$ denotes the amount of

Card 1/2

SOV/156-59-2-10/48

The Self-poisoning of Platinum Adsorption Catalysts

hydrogen necessary for the complete hydrogenation of the entire benzalaniline. Figure 1 shows the linear dependence between $\frac{1}{[H_2]}$ and $\frac{1}{t}$. A calculation - its results are shown by a table - shows that independent of the number of the catalyst atoms the number of reaction processes amounts to approximately 30 in every platinum atom until the poisoning and that the probability of poisoning $1/\beta$ is, therefore, 0.033. The kinetic equation of the processes taking place in connection with self-poisoning is derived and graphically represented by figure 2. The authors thank Professor N. I. Kobozev for valuable advice. There are 3 figures, 1 table, and 1 Soviet reference.

PRESENTED BY: Kafedra fizicheskoy khimii Moskovskogo gosudarstvennogo universiteta im.M.V. Lomonosova (Chair of Physical Chemistry, Moscow State University imeni M. V. Lomonosov)

SUBMITTED: July 9, 1958

Card 2/2

68777
S/170/59/002/12/004/021
B014/B014

10.3000
10 (3)

AUTHORS: Dogin, M. Ye., Lebedev, V. P.

TITLE: The Influence Exerted by the Dimensions of Solid Particles Upon the Resistance Coefficient in the Motion of a Gas Suspension

PERIODICAL: Inzhenerno-fizicheskiy zhurnal, 1959, Vol 2, Nr 12, pp 26 - 30 (USSR)

ABSTRACT: The results under discussion were obtained by the authors from experiments performed on a pneumatic conveying mechanism with various materials of certain dimensions, specific gravity, and shape. The characteristics of the materials under consideration are compiled in table 1. The dependence of the hydraulic resistance on the Reynolds number for various weight concentrations of material Nr 1 (Table 1) is graphically shown in the diagram of figure 1. Similar diagrams were worked out for all materials listed in table 1. The character of the dependence of the hydraulic resistance on the Reynolds number is the same for one and the same weight concentration, irrespective of the sort of material delivered. This is explained by the uniform distribution of the material over the cross section of the conveying tube. Further investigations showed that the hydraulic resistance increases with decreasing transport velocity, which fact means an additional power consumption. Further

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The Influence Exerted by the Dimensions of Solid Particles Upon the Resistance Coefficient in the Motion of a Gas Suspension

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B014/B014

more, it follows from the experimental results shown in the diagram of figure 2 that the effect of the dimensions of the conveyed particles increases considerably with an increase in the material concentration in the current and with a decrease in the transport velocity. The dependence of the hydraulic resistance on the diameter of the particles is diagrammatically represented in figure 3 for several values of concentration and various Reynolds numbers. For this purpose, the authors used the experimental values utilized for the drawing of the diagram shown in figure 2. The effect of the friction of the moving particles and the air is particularly evident here. In conclusion, the authors determine the constant k from the values obtained by them for the various materials according to the formula (2) for determining the coefficient of hydraulic resistance (Table 1). This formula is used especially for practical calculations. As may be observed from the diagram of figure 4, the value of k is dependent on the Reynolds number. There are 4 figures, 1 table, and 6 references, 3 of which are Soviet.

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Card 2/3

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B014/B014

The Influence Exerted by the Dimensions of Solid Particles Upon the Resistance Coefficient in the Motion of a Gas Suspension

ASSOCIATION: Elektromekhanicheskiy institut inzhenerov zheleznodorzhnogo transporta, g. Tomsk (Electromechanical Institute of Railroad Engineers, City of Tomsk)

4

Card 3/3

YEMEL'YANOVA, G.I.; LEBEDEV, V.P.; KOBOZEV, N.I.

Catalytic decomposition of liquid ozone at low temperatures. Part 1: Kinetics of low-temperature catalysis on platinum black. Vest. Mosk. un. Ser. 2:7-9 N-D '60. (MIRA 14:2)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.
(Ozone) (Platinum)

S/189/60/000/004/006/006
B002/B060

11.1120

AUTHORS: Yemel'yanova, G. I., Strakhov, B. V., Lebedev, V. P.

TITLE: Density of Liquid Ozone

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 2, khimiya, 1960, No. 4, p. 11

TEXT: Values for liquid ozone density in available literature differ as much as 8% (Refs. 1-3). A new determination was, therefore, made at -195.6°C. A certain volume was filled with 100% gaseous ozone, and the pressure was measured; ozone was then condensed, and the volume of liquid ozone was measured with a measuring tube. The average value from four measurements was 1.619 ± 0.004 g/cm^3, which is in good agreement with the most current data available. The method was checked by determining the density of liquid oxygen; the value found was 1.204 g/cm^3, as against 1.2037 g/cm^3 in Ref. 4. The errors in measurement did not exceed ±0.002%. There are 4 references: 1 Soviet, 1 German, and 2 US.

84307
S/189/60/000/004/003/006
B002/B060

11.1125

AUTHORS: Strakhov, B. V., Lebedev, V. P.

TITLE: Explosiveness of Gaseous Ozone - Oxygen Mixtures in Metallic Containers

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 2, khimiya, 1960, No. 4, pp. 19 - 20

TEXT: As shown in Ref. 1, the explosiveness of ozone-oxygen mixtures in glass containers on spark-ignition is directly dependent on the ozone content. Here, in a similar way as in Ref. 1, the authors studied the explosiveness in a phosphorus-bronze metallic container (diameter 90 mm, height 180 mm). A 4 μF condenser was used for ignition; experiments made with the much stronger Tesla transformer yielded practically the same results. The pressure ranges investigated were up to 700 torr for O_2, and up to 100 torr for O_3. As may be seen from the diagram, mixtures rich in ozone that would explode in glass containers are still stable in metallic ones. The stability of the mixtures is approximately 25% greater in the

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B002/B060

Explosiveness of Gaseous Ozone - Oxygen Mixtures in Metallic Containers

metal containers; with rising pressure this effect grows further. For pure ozone boundary of the region of explosiveness lies at a pressure of between 10 to 12 torr. There are 1 figure and 1 Soviet reference.

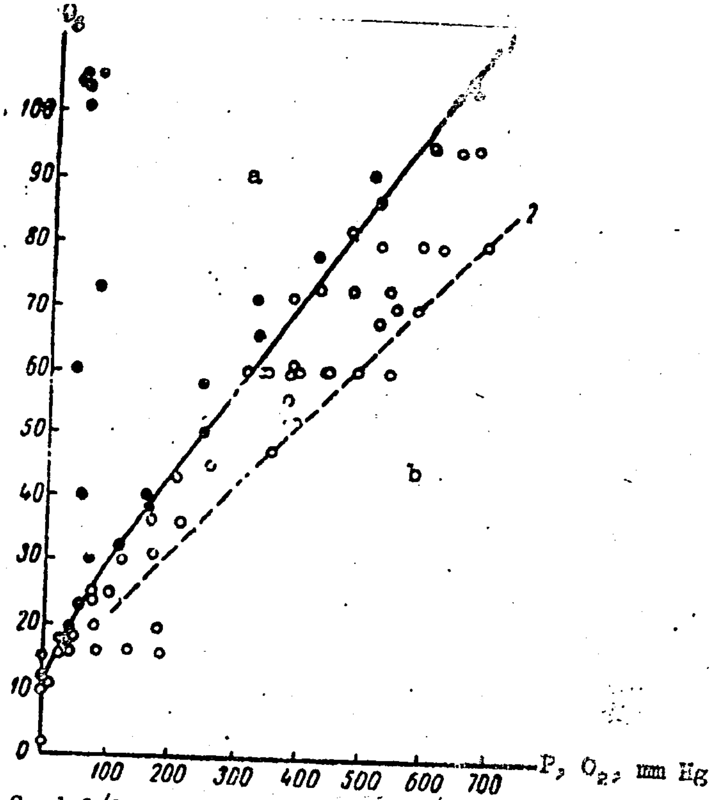
ASSOCIATION: Kafedra fizicheskoy khimii (Chair of Physical Chemistry)

SUBMITTED: March 15, 1960

Card 2/3

84307

S/189/60/000/004/003/006
B002/B060



Limits of Explosiveness of
Gaseous Ozone-Oxygen Mixtures
a) Area of explosiveness;
b) Area of nonexplosiveness.
1) In metallic container;
2) In glass container.
0, no explosion; 0, explosion

Card 3/3

21127

S/189/60/000/005/002/006
B110/B207

11.1310

AUTHORS: Lebedev, V. P., Strel'nikova, Zh. V.

TITLE: Kinetics and decomposition mechanism of hydrogen peroxide on adsorption platinum catalysts

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 2, khimiya, no. 5, 1960, 25-30

TEXT: Hydrogen peroxide is decomposed by platinum applied to the following carriers: carbon, silica gel, aluminum oxide, cadmium oxide, and metallic cadmium according to the theory of active atom groups (Ref. 1: N. I. Kobozev Zh. Fiz. Khimii 13, 1, 1939) at activity centers with odd Pt atomic grouping: $[Pt]_1$, $[Pt]_3$, $[Pt]_5$, $[Pt]_7$. The authors try to explain this phenomenon. In general, the heterogeneous H_2O_2 decomposition on Pt catalysts is kinetically assumed as reaction of the first order. Fig. 1 shows the results of experiments logarithmically according to the fundamental equation of chemical kinetics: $\log[-d[H_2O_2]/dt] = \log k + n\log[H_2O_2]$ (1). The formal order of reaction may change according to the nature of the carrier: at CdO = 0.8;

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B110/B207

Kinetics and ...

silica gel = 1.2; coal 1.7. According to E. I. Schpitalsky's (Ref. 8: Z. phys. Chem. 122, 67, 1926) and N. I. Kobozev's (Ref. 9: ZhFKh, 15, 882, 1945) theory of the heterogeneous hydrogen peroxide decomposition in homogeneous catalysis, the intermediate product $Pt\langle^{O}_{O}$: $2H_2O_2 + Pt \xrightleftharpoons{K} PtO_2 + H_2O$ is assumed to form reversibly; its monomolecular decomposition $PtO_2 \xrightarrow{k_r} Pt + O_2$ determines the total reaction rate. $-d[H_2O_2]/dt = k_r[PtO_2]$. If $[Pt]$ is the amount of platinum, effecting the H_2O_2 decomposition until the beginning of the reaction, the equivalent amount at the steady process is: $[Pt]_s = [Pt] - [PtO_2]$ (3). The equilibrium constant between H_2O_2 and active Pt centers is the following: $K = [PtO_2]/ H_2O_2 \, [(Pt)-(PtO_2)]$. When $[PtO_2]$ from (3) is introduced into (1) the following kinetic equation is obtained: $-d[H_2O_2]/dt = k_r \cdot K \cdot [H_2O_2]^2 \cdot [Pt] /(1+K[H_2O_2])$ (5), or $1/d[H_2O_2]/dt = 1/(k_r \cdot K \cdot [Pt]) \cdot 1/[H_2O_2]^2 + 1/k_r \cdot [Pt]$ (6). Only at high H_2O_2 concentrations,

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B110/B207

Kinetics and ...

deviations occur from the linear function which are explained by interactions of the intermediate products. The increase of the reaction order corresponds to the relative decrease of $K \cdot [H_2O_2]^2$, which confirms the effect of the carrier upon the equilibrium between susbstrate (H_2O_2) and intermediate (PtO_2). Independent of the carrier and its Pt concentration, the activation energy of the intermediate is constant (30 000 cal/mole) (Table 2) which exceeds the apparent activation energy of 6000-12000 cal/mole determined according to Arrhenius. According to (5), however, any formal kinetic constant is a function of the product of constants of the intramolecular recombination constant k_r and the equilibrium constant K. The apparent activation energy according to Arrhenius is the sum of the effectively positive activation energy of the intramolecular recombination and the enthalpy of the intermediate whose formation proceeds exothermically; with the catalyst Pt (6%)/CdO, K is 5.35 cm^{-6} at 20°C and at 25°C = 2.64 cm^{-6}; ΔH is therefore -24000 cal/mole. The values according to Arrhenius can thus be explained. In the heterogeneous H_2O_2 decomposition, the intermediate

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Kinetics and ...

product $\mathrm{Pt}\langle{}^{O}_{O}$ is active. A Pt atom with 2 free valences is necessary for its formation. With respect to the electron sheath, Pt may be: $5d^{10}6s^{0}$; $5d^{8}6s^{2}$, and $5d^{9}6s^{1}$. The first two states are saturated; at $5d^{9}6s^{1}$, two valences are free. If the Pt atom occurs in inactive states, it may presumably be activated by interaction with the substrate molecule at the expense of the exothermic energy of the intermediate. If two Pt atoms are close together in the state $5d^{9}6s^{1}$, spin interaction takes place and a system consisting of two atoms with saturated valences is formed. Unsaturated Pt atoms of the $5d^{9}6s^{1}$ state, effecting the H_2O_2 decomposition can therefore only exist in odd-numbered arrangement. There are 4 figures, 2 tables, and 12 references: 10 Soviet-bloc and 2 non-Soviet-bloc.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova Kafedra fizicheskoy khimii (Moscow State University imeni M. V. Lomonosov, Department of Physical Chemistry)

SUBMITTED: July 20, 1960

Card 4/8

LEBEDEV, V.P.

Relationship between parameters of the Arrhenius equation for deposited platinum catalysts. Probl. kin. i kat. 10:204-209 '60.
(MIRA 14:5)

1. Moskovskiy gosudarstvennyy universitet.
(Platinum)

69140

S/076/60/034/03/033/038
B005/B016

AUTHORS: Lebedev, V. P., Trosman, E. A.

TITLE: Catalytic Activity of Platinum Deposited on Cadmium

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol 34, Nr 3, pp 687-690 (USSR)

TEXT: Experiments are described in publications (Refs 1-3) in which platinum catalysts on various semiconductors and insulators as carriers were used to decompose hydrogen peroxide. In all these investigations it was found that the decomposition of peroxide takes place on active centers of odd-numbered composition: $[\mathrm{Pt}]_1$, $[\mathrm{Pt}]_3$, $[\mathrm{Pt}]_5$, $[\mathrm{Pt}]_7$. The same result was also obtained when using ion catalysts (Co^{2+}, Ni^{2+}) (Ref 4). The authors of this article studied the problem as to whether this effect of the odd-numbered composition of the active center occurs also when using conductors as carriers. The authors used powdered metallic cadmium as carrier for the platinum catalyst which proved to be unsuited for catalytic decomposition of hydrogen peroxide. Catalytically active samples were prepared by stirring a weighed sample of cadmium with a platinum-chloride solution of the corresponding concentration. The hydrogen peroxide adsorption on these catalysts was 95-98%. The number of the peroxide molecules which are decomposed in 1 second on all platinum atoms corresponding to 1 g of

Card 1/3

the catalyst served as a measure of the total activity of the catalyst. The specific activity is expressed by the number of peroxide molecules which are decomposed in 1 second on a platinum atom. Figure 1 shows the dependence of the total and specific activity of platinum deposited on cadmium upon the number of platinum atoms per 1 g of the sample at two temperatures (20°C, 30°C). This dependence shows distinct maxima and minima of activity. The evaluation of the resulting curves showed that the decomposition of hydrogen peroxide on platinum deposited on metallic cadmium takes place on active structures of the compositions $[Pt]_1$, $[Pt]_3$, $[Pt]_5$, $[Pt]_7$. A comparison of this result with the above-mentioned data of publications shows that the chemical and physical nature of the carrier substance obviously does not exert any influence upon the composition of the active center. The composition of the active centers is therefore only determined by the nature of the process taking place on the catalyst. Figure 2 compares the absolute specific catalytic activities of platinum on various carriers in the decomposition of hydrogen peroxide. The lowest specific activity is obtained when using carbon as carrier. The catalytic activity of the deposited metal is not considerably altered by the use of cadmium, as compared to other carriers. The reasons why the decomposition of hydrogen peroxide always takes

Catalytic Activity of Platinum Deposited on Cadmium

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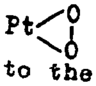
B005/B016

place on odd-numbered structures were not considered in detail. The authors assume that a catalyst atom having two unpaired electrons in its outermost shell is necessary for the decomposition of the peroxide. For platinum, this corresponds to the electron distribution $5d^9 6s^1$. The decomposition of hydrogen peroxide probably proceeds via an activated intermediate of the composition  , the formation of which in even-numbered structures is not possible owing to the spin interactions of the valence electrons. There are 2 figures and 8 references, 7 of which are Soviet.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: May 14, 1958

Card 3/3

Lebedev, V. P.

81972
S/076/60/034/07/06/009
B015/B070

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11.5000

AUTHORS: Strakhov, B. V., Yegorov, V. P., Lebedev, V. P., Kobozev, N. I.

TITLE: The Physical Chemistry of Concentrated Ozone. IX. The Dependence of the Yield of Nitric Oxide on the Explosion Temperature of Ozone - Nitrogen Mixtures

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 7, pp. 1524-1527

TEXT: Investigations were made on the dependence of NO yield on the composition of ozone - nitrogen mixture for constant temperature of explosion and an initial pressure of 100 torr, as well as for constant compositions of the initial gaseous mixture. The experiments were performed in an apparatus already described (Ref. 1). The temperature of the explosion was controlled by introducing stoichiometric mixtures of methane and ozone in the explosion pipette. The isotherms of NO yield (Fig. 4) obtained for the constant temperatures of 3000° and 3500°K of explosion show a maximum for a 40% ozone content in the mixture. If the composition of

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The Physical Chemistry of Concentrated Ozone.
IX. The Dependence of the Yield of Nitric Oxide
on the Explosion Temperature of Ozone - Nitrogen
Mixtures

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B015/B070
81972

the mixture is kept constant (65% O_3 + 35% N_2), NO yield varies with explosion temperatures from 0.6% at 2500°K to 3% at 4250°K, viz., a five-fold increase in the yield for a 1.7-fold increase in temperature. The results obtained are explained on the assumption that the yield varies according to the change in the thermodynamic equilibrium[1] of the reaction $N_2 + O_2 \rightleftarrows 2\ NO$ at the temperature of explosion. Ye. N. Yeremin, A. N. Mal'tsev, Ya. B. Zel'dovich, P. Ya. Sadovnikov, D. A. Frank-Kamenetskiy are mentioned in the text. There are 5 figures and 4 references: 3 Soviet and 1 German.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: October 5, 1958

Card 2/2

83692
S/076/60/034/008/004/014
B015/B054

11.1180
11.1120

AUTHORS: Strakhov, B. V., Lebedev, V. P. and Kobozev, N. I. (Moscow)

TITLE: Physical Chemistry of Concentrated Ozone. X. Influence of the Vessel Diameter on the Nitrogen Oxide Yield in the Explosion Oxidation of Nitrogen in Mixtures With Ozone

PERIODICAL: Zhurnal fizicheskoy khimii, 1960, Vol. 34, No. 8, pp. 1706-1708

TEXT: The authors investigated the dependence of the NO yield in explosions of ozone-nitrogen mixtures on the diameter of cylindrical glass vessels (diameter 10, 22, 31, and 44 mm, length 630 mm) at an initial pressure of 150 torr. The diagrams obtained (Figs. 1-2) show that in the concentration range of from 50 to 90% of O_3 the NO yield rises with the vessel diameter; with a diameter change from 10 mm to 44 mm, the maximum yield rises from 0.4% to 1.95%. Approaching the diameter of 44 mm, the yield increase slows down with rising ozone concentration in the gas mixture. An apparatus described in Ref. 4 was used for the present

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83692

Physical Chemistry of Concentrated Ozone. X. Influence of the Vessel Diameter on the Nitrogen Oxide Yield in the Explosion Oxidation of Nitrogen in Mixtures With Ozone

S/076/60/034/008/004/014
B015/B054

experiments. A. G. El'kenbard, R. I. Genkina, and M. V. Polyakov are mentioned in the paper. There are 2 figures and 5 Soviet references.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: October 8, 1958

Card 2/2

PANCHENKOV, Georgiy Mitrofanovich; LEBEDEV, Vladimir Petrovich; GOL'DENBERG,
G.S., red.; YERMAKOV, M.S., tekhn. red.

[Chemical kinetics and catalysis] Khimicheskaia kinetika i kataliz.
Moskva, Izd-vo Mosk. univ., 1961. 550 p. (MIRA 14:8)
(Chemical reaction, Rate of) (Catalysis)

23009

S/189/61/000/004/002/002
D051/D112

11.8300
11.1125

AUTHORS: Strakhov, B.V., Lebedev, V.P., Kobozev, N.I.

TITLE: Transition of the detonation of a gaseous ozone-oxygen mixture into a liquid ozone-oxygen solution

PERIODICAL: Moskva, Universitet. Vestnik. Seriya II Khimiya, no. 4, 1961, 31-32

TEXT: The present study is concerned with the explosive properties of the system liquid ozone-oxygen solution - gaseous ozone-oxygen mixture. It continues investigations of N.I. Kobozev, V.V. Yastrebov, and Ye.N. Pitskhelauri (Ref. 1: Zhurn. fiz. khimii, 33, 649, 1959; Ref. 2: Zhurn. fiz. khimii, 33, 1209, 1959), which showed that the explosive sensitivity of ozone-oxygen solutions abruptly diminishes with increasing oxygen concentration. In a special cylinder, which permitted separate preparation of liquid and gas of various concentrations, the authors studied the explosiveness of the liquid ozone-oxygen solutions depending on composition and pressure, from 150 to 500 mm mercury column, of the gaseous ozone-oxygen mixtures, which were in contact with the liquid. The experimental results are given in the figure.

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23009

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D051/D112

Transition of the detonation ...

The curves represent the boundaries of explosiveness for the indicated pressures of the gas phase. It can be seen that growing pressure shifts the boundary of transition of the detonation from gas to liquid towards lower ozone concentrations in the gas, whereas lower ozone concentrations in the liquid shift this boundary towards higher ozone concentrations in the gas. The shaded section of the figure represents the zone of safety, whose points correspond to concentrations of ozone in the gas and liquid phase below 50 and 25%, respectively, where detonations of the gas are not transmitted to the liquid. This zone holds for pressures of the gas phase not above 500 mm mercury column. There are 1 figure and 2 Soviet references.

X

ASSOCIATION: Kafedra fizicheskoy khimii (Department of Physical Chemistry)

SUBMITTED: July 9, 1960

Card 2/3

STREL'NIKOVA, Zh.V.; LEBEDEV, V.P.

Composition of active centers in the hydrogenation of unsaturated compounds. Vest. Mosk. un. Ser. 2: Khim. 16 no.1:38-41 Ja-F '61.
(MIRA 14:4)

(Hydrogenation) (Unsaturated compounds)

30342

S/189/61/000/006/004/005
D228/D304

11.1120

AUTHORS: Yemel'yanova, G.I., Lebedev, V.P. and Kobozev, N.I.

TITLE: Catalytic decomposition of liquid ozone at low temperatures. II The energy of activation of the low-temperature decomposition of ozone and the activity of palladium black

PERIODICAL: Moscow. Universitet. Vestnik. Seriya II, khimiya, no. 6, 1961, 31-34

TEXT: This investigation of the low-temperature decomposition of ozone and the activity of Pd black is a continuation of previous research by the authors (Ref. 1: Vestn. Mosk. un-ta, ser. khimii, no. 6, 7, 1960) in which a catalytic process was discovered for the decomposition of liquid ozone on Pt black at - 195.6°. Their new data, obtained from the decomposition of ozone on Pt black at - 183° and - 195.6°, show that the mean

X

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D228/D304

Catalytic decomposition ...

apparent energy of activation of the process is 500 cal. mol.$^{-1}$. Pd black was found to be equally effective; the data for this catalyst satisfy the kinetic equation previously deduced for Pt black, and the maximum number of molecules decomposed in one second by one atom of catalyst was calculated as 1.2×10^{-2} - an unexpectedly high value for low-temperature catalytic processes. However, Ag black, CuO, Cu, NiO, Ni_2O_3, Fe_2O_3, and Fe are catalytically quite inactive. It was also established from other tests that the rate of catalysis for Pd and Pt black is in no way influenced by diluting the ozone with oxygen or nitrogen. Moreover, the experimental study of the relationship of the catalyst's activity to its quantity - at a constant concentration of ozone - indicates a certain decline in the relative activity of Pt black when its concentration exceeds 30 mg. The authors hence conclude that the decomposition of liquid ozone on Pd and Pt black is undoubtedly a heterogeno-

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Catalytic decomposition ... S/189/61/000/006/004/005
D228/D304

catalytic process. However, further work will be undertaken to ascertain whether the transmission of the energy of the simple exothermic act of dissociation to the reacting molecules is accomplished through the catalysts crystal-lattice or in the adsorbed layer of ozone. There are 4 figures, 1 table, and 2 references: 1 Soviet-bloc and 1 non-Soviet-bloc.

X

ASSOCIATION: Kafedra fizicheskoy khimii (Department of Physical Chemistry)

SUBMITTED: August 3, 1960

Card 3/3

KALMANOVSKIY, V.I.; KISELEV, A.V.; LEBEDEV, V.P.; SAVINOV, I.M.; SMIRNOV, N.Ya.; FIKS, M.M.; SHCHERBAKOVA, K.D.

Gas chromatography in glass capillary columns with a chemically modified surface. Zhur.fiz.khim. 35 no.6:1386-1388 Je '61. (MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova i Dzerzhinskiy filial opytno-konstruktorskogo byuro avtomatiki Goskhimkomiteta.

(Gas chromatography)

STREL'NIKOVA, Zh.V.; TROSMAN, E.A.; LEBEDEV, V.P.

Catalytic activity of platinum deposited on cadmium oxide. Zhur. fiz.khim. 35 no.6:1327-1330 Je '61. (MIRA 14:7)

1. Moskovskiy gosudarstvennyy universitet imeni M.V.Lomonosova.
(Platinum) (Hydrogen peroxide)

BALANDIN, A.A., akad., red.; KOBOZEV, N.I., prof., red.; LEBEDEV, V.P., dots., zam. red.; MAL'TSEV, A.N., dots., zam. red.; AGRONOMOV, A.Ye., dots., zam. red.; GROMOV, V.N., red.; LAZAREVA, L.V., tekhn. red.

[Transactions of the First Interuniversity Conference on Catalysis] Trudy Mezhvuzovskogo soveshchaniia po katalizu, 1st. Moskva, Izd-vo Mosk. univ. No.1. Pt.1. 1962. 475 p. (MIRA 16:7)

1. Mezhvuzovskoye soveshchaniye po katalizu. 1st. 2. Khimicheskii fakul'tet Moskovskogo gosudarstvennogo universiteta (for Balandin, Kobozev, Lebedev).

(Catalysis—Congresses)

BALANDIN, A.A., akademik, red.; KOBOZEV, N.I., prof., red.; LEBEDEV, V.P., dots., zam. red.; MAL'TSEV, A.N., zam. red.; AGRONOMOV, A.Ye., dots., zam. red.; TOPCHIYEVA, K.V., prof., red.; YUR'YEV, Yu.K., prof., red. PANCHENKOV, G.M., prof., red.; SOKOL'SKIY, D.V., akademik, red.; VOL'KENSHTEYN, F.F., prof., red.;LAZAREVA, L.V., tekhn. red.

[Catalysis in the institutions of higher learning; papers of the First Interuniversity Conference on Catalysis]Kataliz v vysshei shkole; trudy. Moskva, Izd-vo Mosk. univ. No.1. Pt.2. 1962. 325 p.
(MIRA 15:10)

1. Mezhvuzovskoye soveshchaniye po katalizu. 1st, 1958. 2. Akademiya nauk Kazakhskoy SSR (for Sokol'skiy). 3. Khimicheskiy fakul'tet Moskovskogo gosudarstvennogo universiteta (for Yur'yev).
(Catalysis)

STREL'NIKOVA, Zh. V.; LEBEDEV, V. P.

Change of activity of adsorption platinum catalysts during prolonged storage. Vest. Mosk. un. Ser. 2: Khim. 16 [i.e.17], no.6:75 N-D '62. (MIRA 16:1)

1. Kafedra fizicheskoy khimii Moskovskogo universiteta.

(Platinum catalysts)

STRAKHOV, B.V.; LEBEDEV, V.P.; KOBOZEV, N.I.

Physical chemistry of concentrated ozone. Part 9. Zhur. fiz. khim. 36 no.11:2388-2392 N'62. (MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

STREL'NIKOVA, Zh.V.; TROSMAN, E.A.; LEBEDEV, V.P.

Corrosive sublimate poisoning of platinum on cadmium oxide adsorption catalysts in the decomposition of hydrogen peroxide. Zhur. fiz. khim. 36 no.11:2469-2472 N'62.
(MIRA 17:5)

1. Moskovskiy gosudarstvennyy universitet imeni Lomonosova.

L 16932-63 EPR/EPF(c)/EWP(q)/EWT(m)/BDS AFFTC Ps-4/Pr-4 RM/WW/JD
S/076/63/037/004/024/029

69

AUTHOR: Strel'nikova, Zh. V., Lebedev, V. P.

TITLE: Action of acids on platinum adsorption catalysts in the decomposition of hydrogen peroxide

27

PERIODICAL: Zhurnal fizicheskoy khimii, V. 37, No. 4, 1963, 920-922

TEXT: A study is made of the action of nitric, sulfuric, and hydrochloric acids on platinum catalysts when it is accompanied by the decomposition of hydrogen peroxide. Basically the purpose of the study is to clarify the anomalous action of hydrochloric acid. Under the simultaneous action of the hydrochloric acid and hydrogen peroxide, part of the atoms of the catalyst go into solution. At the same time the catalytically more active surface atoms enter into solution. Only a small part (not more than 1%) of the surface atoms of the catalyst are catalytically active. There are 2 tables. The most important English-language source reads as follows: H. E. Kluksdanl, R. J. Houston, J. Phys. Chem., 65, 1469, 1961.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet (Moscow State University)

SUBMITTED: June 19, 1962

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